



SAFETY MANAGEMENT SYSTEM (SMS)

Occurrence and Risk Mitigation Reporting

Summary Analysis Report 2025

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ACKNOWLEDGEMENTS

The CSPA Technical and Safety Committee has prepared this report under the authority granted to it by the CSPA Board of Directors.

1 - INTRODUCTION

The Canadian Sport Parachuting Association (CSPA) integrated the Occurrence and Risk Mitigation Reporting into the existing Accident/Incident/Malfunction (AIM) system back in 2014. Since then, the yearly report has provided general statistics gathered from submitted AIM reports with a breakdown into five (5) categories within the skydiving industry:

- Tandem Skydives,
- Student Skydives,
- Experienced Skydives,
- Equipment irregularities, and
- Aircraft.

The CSPA Technical & Safety Committee (T&SC) concluded in 2019 that there were areas of opportunity for a more in-depth Summary Analysis Report provided to the skydiving community each year. The primary goals of the Summary Analysis Report are:

- To assess areas of opportunity gathered from AIM reports that pose potential risk in skydiving;
- Minimize recurrence through education and awareness;
- and utilize trending analysis to modify and/or implement skill development material as needed.

With these goals in mind, the T&SC is hopeful that the skydiving community has another tool in the toolbox to support their long-term development in our sport.

2 – ACCIDENT/INCIDENT/MALFUNCTION (AIM) REPORTING

2.1. Purpose

An AIM report is a formal recording of the facts related to an accident, incident, malfunction and/or equipment irregularities. The report usually relates to an accident (any occurrence resulting in injury requiring medical attention or a fatality), or incident (any occurrence which could have resulted in a situation leading to injury or fatality) that has occurred. It also pertains to any unusual occurrence where a partial or complete malfunction of the equipment may have led to the initiation of emergency procedures. An Equipment occurrence (incorporated in 2025) shall be considered as any irregularity related to equipment that occurs outside of the physical phases of a skydive that could have resulted in an Accident, Incident, or Malfunction. The sole purpose of the AIM report is to enhance safety and assess preventative measures.

2.2. Gathering of Information

Any incident that involves skydiver, staff, and/or customer safety should be recorded, no matter how insignificant it may seem. An investigation of what happened should be undertaken as soon as possible after the incident occurs and after any injured person(s) has been taken care of. The report that is generated as a result should provide a full account of what took place.

Following an occurrence, and/or identification of equipment irregularity, it is strongly recommended to submit an [AIM report](#) to CSPA's National Office. The CSPA Registered Participant involved, CSPA Coach, Instructors, Riggers, or other qualified personnel should submit the report directly to CSPA National Office. We strongly recommend the DZ retain a copy of any DZ-submitted AIMs for their records. In the event of an accident, injury, fatality and/or 3rd party loss, CSPA requires [immediate notification](#) and AIM reports must be filed within ten (10) working days of the occurrence.

2.3. How the AIM is used for analysis

All AIM reports received by the CSPA National Office are reviewed for completion. Gathered from the AIM reports are key areas of interest to assist in the Occurrence and Risk Mitigation analysis, including but not limited to, type of occurrence, total jump numbers, and description of the occurrence. Details pertaining to participant(s) and location are kept confidential and not used for the analysis.

Once AIM report data is entered into the report data, the occurrence is categorized into five (5) categories within the skydiving industry:

- (1) Tandem Skydives,
- (2) Student Skydives,
- (3) Experienced Skydives,
- (4) Equipment irregularities, and
- (5) Aircraft

For each occurrence, the detailed description of the event and the recommendations of the Dropzone Safety Officer (DZSO) are carefully reviewed. A further breakdown of occurrence type and/or trend is applied. This includes such categories as Exit, Deployment, Freefall, Canopy, Landing, or Equipment and is a general categorization of the main event described. CSPA data is also compared to CSPA historical results, and the International Skydiving Committee (ISC) Safety Survey Report to help identify any common trending and/or unique occurrences.

Upon entry and categorization of information of all AIM reports, the designated SMS Analyst, in collaboration with T&SC Chair, begin to compile the qualitative data to identify trending and areas of opportunity for the skydiving community. As occurrences are identified, proposed action plans are provided. The goal of the proposed action plan(s) is to provide the skydiving community references for prevention, education, and coaching. Reference material often refers to areas within the CSPA Parachute Information Manuals (PIMs), manufacturers guidelines, and other CSPA source documents. Furthermore, each occurrence identifies who the proposed action plan is best suited for, such as but not limited to, the jumper, packer(s), coach(s), and/or instructor(s).

Upon completion of the Occurrence and Risk Mitigation analysis, the detailed AIM data report and statistics are posted to the CSPA website for reference, including the [historical comparisons](#) for the benefit of the skydiving community.

3 – 2025 AIM RESULTS

3.1. Overall AIM Submissions Statistics

We know that all occurrences are not reported through an AIM report for a variety of reasons. Most noted from past years, is the lack of AIM reports when an occurrence is not considered significant and/or did not result in an immediate injury (often referred to as a near-miss). It is our hope that the AIM report is utilized more frequently even in occurrences that may seem less significant such as a low-speed malfunction resulting in emergency procedures being implemented and a successful landing in the designated landing area. Although it may appear it was a non-event because no one was injured, the occurrence itself can be useful in identifying trends and opportunities for further education. Additionally, CSPA is working with the PIA Technical Committee in tracking and analyzing hard openings. CSPA strongly encourages reporting any experiences with hard openings through the CSPA AIM reporting system.

Although we can conclude that not all occurrences may have been reported, we still believe it is important to analyze the data we are supplied with for potential areas of opportunity and preventative action plans to reduce the occurrence rates year after year. It is, however, observed that AIM reports are more likely to be completed for occurrences with Tandem Skydives, therefore providing us a more accurate reflection of the historical rate of occurrence in this area.

In 2025, a total of eighty-six (86) AIM reports were submitted. This is a decrease of 15% over a submission of one hundred and one (101) AIM reports in 2024 (*Table 1: Total AIMs Reported*). Looking at the overall breakdown, Experienced occurrences saw the largest decrease in 2025 compared to 2024 (26.23% decrease), while Tandem occurrences saw an increase of 15%, and Student occurrences recorded a 16.67% decrease. (*Table 1: Total AIMs Reported*).

Analysis of trending indicated the following:

- (1) Combined Overall Occurrence Trending:
 - 3.01% decrease over a 3-year trend
 - 1.15% decrease over a 5-year trend
 - 1.42% increase over a 10-year trend
- (2) Tandem Occurrence Trending:
 - 16.95% increase over a 3-year trend
 - 13.86% increase over a 5-year trend
 - 5.99% increase over a 10-year trend
- (3) Student Occurrence Trending:
 - 6.25% decrease over a 3-year trend
 - 14.77% decrease over a 5-year trend
 - 18.03% decrease over a 10-year trend
- (4) Experience Occurrence Trending:
 - 12.34% decrease over a 3-year trend
 - 6.64% decrease over a 5-year trend
 - 3.21% increase over a 10-year trend

More in-depth review by occurrence categories will be discussed later in this report.

TABLE 1: Total AIMs Reported

	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
Tandem	23	20	16	17	25	27	21	20	28	20
Student	15	18	15	23	17	12	8	36	18	21
Experience	45	61	48	53	34	43	33	36	46	37
Aircraft	1	1	0	0	0	0	0	1	2	4
Equipment	2	1								
Total	86	101	79	93	76	82	62	93	94	82

This section provides an overview of reported skydiving safety outcomes for 2025, based on TABLE 2: Total AIMs Reported by Type. The data highlights how accidents, incidents, malfunctions, and fatalities have shifted over time, offering insight into areas of improvement and ongoing challenges. Accidents declined to 29 in 2025 from 34 in 2024, reflecting a 14.7% decrease and a nearly 30% reduction over eight years. Incidents also fell sharply to 25 in 2025 from 33 in 2024, though longer-term trends show a 55% increase compared to eight years ago. Malfunctions remained relatively stable at 31 in 2025 versus 33 in 2024 but have risen gradually over the past five to eight years, with increases of 14–22%. Fatalities stayed low, with one reported in 2025, unchanged from 2024. Together, these patterns illustrate the evolving risk profile within the sport and point to where safety efforts may need to be sustained or strengthened.

TABLE 2: Total AIMs Reported By Type

	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
Accident	29	34	37	43	38	45	36	57	54	36
Incident	25	33	22	17	12	6	5	15	10	16
Malfunction	31	33	20	28	24	29	19	20	26	25
Fatality	1	1	0	5	3*	2	2	0	2	1
Total	86	101	79	93	76	82	62	92	92	78

*Tandem Double Fatality

The dataset below provides a comparative look at skydiving safety outcomes across three categories: accidents, incidents, and malfunctions. It examines participant age, experience levels, and equipment usage within combined, tandem, student, and experienced groups. By presenting both averages and medians, the data highlights not only the overall scale of jumps but also the typical ranges in which these events occur. The goal of this information is to identify patterns that distinguish accidents from incidents and malfunctions, offering insight into how age, jump frequency, and equipment use may influence risk.

Combined Categories	Accident	Incident	Malfunction
Average Age	39	35	38
Average Number of Jumps	709	559	1015
Median Number of Jumps	250	338	270
Tandem Category	Accident	Incident	Malfunction
Average Age (Tandem Student)	40	37	36
Average Number of Total Jumps (Instructor)	1860	5099	3355
Median Number of Total Jumps (Instructor)	2005	2508	2899
Average Number of Tandem Jumps (Instructor)	1401	1047	1805
Median Number of Tandem Jumps (Instructor)	407	550	2350

Student Category	Accident	Incident	Malfunction
Average Age	42	33	36
Average Number of Jumps (Student)	3	8	6
Average Number of Jumps (Instructor - Type Specific)	170	176	278
Median Number of Jumps (Instructor – Type Specific)	30	92	28
Experienced Category	Accident	Incident	Malfunction
Average Age	38	34	40
Average Number of Jumps	670	431	888
Median Number of Jumps	420	403	245
Average Number of Jumps on Equipment	160	236	166
Median Number of Jumps on Equipment	29	178	26

Taking a further look at all occurrences, we have identified Canopy occurrences saw the greatest increase (20% in 2025, with a 3-year trending increase of 12.50% (*Table 3: Total AIM Reported By Category*)). Although Canopy occurrences only accounted for 6.98% of reported AIMs, it is still important to identify the trending increase. Further breakdown of Deployment occurrences indicates that Experienced category accounts for 65.63%, Tandem category accounts for 25%, and Students 9.38%. Most notably, it was identified that 25% of deployment occurrences were analyzed as packing being the root cause which led to hard openings, bag locks, line twists, and/or no main deployment despite initiation attempts. Further details are provided under each category in this report.

Freefall occurrences saw a decrease of 55.56% in 2025 compared to 2024, with a 5-year trending decrease of 28.57%. The majority of the Freefall occurrences can be attributed to the 125% increase in the Tandem category where we also noted a 114.29% 5-year trend increase.

Although Landing occurrences accounts for 37.21% of all AIM reports, we can see a 15.04% 3-year trending decrease. When looking at landing occurrences, it is worth noting that Tandem category Landing occurrences have seen a 5-year trend decrease of 28.57% and a 10-year trend decrease of 40.68%. Student category Landing occurrences saw a 30.77% decrease in 2025 compared to 2024 and has a 5-year trend decrease of 15.09%. Experienced category also has seen a 3-year trending decrease of 9.43% and a 5-year decrease of 19.19%.

TABLE 3: Total AIM Reported By Category: Combined

	Combined 2025	Combined 2024	Combined 2023	Combined 2022	Combined 2021	Combined 2020	Combined 2019	Combined 2018	Combined 2017	Combined 2016
Exit	5	6	4	4	4	4	2	9	3	3
FreeFall	4	9	6	6	3	1	0	0	0	0
Deployment	32	33	21	30	34	33	22	26	25	14
Canopy	6	5	5	1	0	2	0	1	2	6
Landing	32	43	38	53	35	37	36	56	42	38
Other	5	5	4	0	0	5	0	0	0	0

Total AIM Reported By Category: Tandem

	Tandem 2025	Tandem 2024	Tandem 2023	Tandem 2022	Tandem 2021	Tandem 2020	Tandem 2019	Tandem 2018	Tandem 2017	Tandem 2016
Exit	1	1	0	1	2	2	2	1	1	1
FreeFall	3	0	1	1	2	0	0	0	0	0
Deployment	8	9	1	5	10	8	5	8	9	8
Canopy	0	0	1	0	0	0	0	1	2	2
Landing	7	10	11	10	11	15	14	10	16	10
Other	3	0	1	0	0	2	0	0	0	0

Total AIM Reported By Category: Student

	Student 2025	Student 2024	Student 2023	Student 2022	Student 2021	Student 2020	Student 2019	Student 2018	Student 2017	Student 2016
Exit	2	1	1	2	2	2	0	4	1	1
FreeFall	0	1	0	3	1	0	0	0	0	0
Deployment	3	2	1	5	6	1	3	9	8	3
Canopy	1	1	3	0	0	1	0	0	0	2
Landing	9	13	10	13	8	7	5	23	13	14
Other	0	0	0	0	0	1	0	0	0	0

Total AIM Reported By Category: Experience

	Experience 2025	Experience 2024	Experience 2023	Experience 2022	Experience 2021	Experience 2020	Experience 2019	Experience 2018	Experience 2017	Experience 2016
Exit	2	3	3	1	0	0	0	4	1	1
FreeFall	1	8	5	2	0	1	0	0	0	0
Deployment	21	22	19	19	18	24	14	9	8	3
Canopy	4	4	1	1	0	1	0	0	0	2
Landing	16	20	17	30	16	15	17	23	13	14
Other	1	4	3	0	0	2	0	0	0	0

3.2. Tandem Skydive AIM Statistics

Based on the total submitted Tandem AIM reports for 2025, accidents accounted for 26.09%. Representing a 14.29% decrease from 2024 of the Tandem categories, while trending over 3 years shows a decrease of 28% and a 5-year trending decrease of 41.18% specific to accidents reported (*Table 4: Total AIMs Reported for Tandem Occurrences*). Incidents account for 39.13% of all Tandem AIM reports. Incident occurrences have seen a 80% increase in 2025 compared to 2024, with a 5-year increase trend of 114.29%. Reported Tandem Malfunctions saw an increase of 41.18% over a 3-year trending and 42.86% over 5-year trending.

We have seen an overall increase in Tandem AIM reports by 15% compared to 2024, with a 5-year increase trend of 13.86%. The average age of a Tandem passenger in the 2025 reported AIMs data was 37.7 years old.

TABLE 4: Total AIMs Total AIMs Report for Tandem Occurrences

	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
Accident	6	7	12	12	14	20	14	13	22	12
Incident	9	5	3	1	3	1	2	1	2	3
Malfunction	8	8	1	4	7	6	4	6	4	5
Fatality	0	0	0	0	2*	0	1	0	0	0
Total	23	20	16	17	26	27	21	20	28	20

*Tandem Double Fatality is only counted as one (1) AIM Type

Landing occurrences account for 30.43% of all 2025 AIM report submissions for the Tandem category (*Table 3: Total AIMs Reported by Category: Tandem*). This indicates a 5-year trending decrease of 28.57%. Key trends noted in the qualitative analysis include:

- **Instructor Technique & Conditions:** Several incidents stemmed from misjudged turns, uneven flares, or environmental factors (soft ground, wind gusts, thermals). These highlight how small variations in landing execution or conditions can lead to injury.
- **Student Physical Limitations:** A recurring theme is students' inability to lift their legs properly during landing. This significantly increased injury risk, with one case resulting in a leg fracture. In some situations, pre-existing conditions were not disclosed to the instructor, limiting their ability to adapt.

Deployment occurrences in the Tandem category saw a decrease of 11.11% compared to 2024. However, we saw a recorded 3-year trending increase of 33.33% and Deployment occurrences accounted for 34.78% of reported total Tandem AIMs

3.3. Student Skydive AIM Statistics

Based on the total submitted AIM reports for 2025, accidents accounted for 40%, with a decrease of 45.45% over 2024 in the student category and a decrease of 18.18% over the 3-year trending, and 30.23% decrease over a 5-year trend. However, we can see an increase in incident occurrences for Students of 25% in 2025 compared to 2024, with over a 3-year trend at a decrease of 11.76% (*Table 5: Total AIMs Reported for Student Occurrences*). Malfunctions accounted for 26.67% of all reports Student AIMs in 2025. Malfunctions continue to see an increasing trend with a report increase of 33.33% over 3-years and 5.26% over 5-years.

TABLE 5: Total AIMs Report for Student Occurrences

	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
Accident	6	11	5	11	10	9	5	27	13	16
Incident	5	4	8	5	3	1	1	7	1	2
Malfunction	4	3	2	6	4	2	2	2	3	3
Fatality	0	0	0	1	0	0	0	0	1	0
Total	15	18	15	23	17	12	8	36	18	21

Data indicated a decrease of 30.77% in landing occurrences within the student category in 2025 compared to 2024, with a 3-year trending decrease of 15.63% and a 5-year trending decrease of 15.09% (*Table 3: Total AIMs Reported by Category: Student*). However, Landing occurrences remain the highest reported occurrence in the student category accounting for 60% of all Student AIM reports. Key trends noted in the qualitative analysis include:

- Multiple students sustained ankle, foot, or leg injuries, often fractures or sprains, due to improper flare execution or failure to perform a parachute landing fall (PLF).
- Flare Technique Issues: Several cases involved incomplete or late flares, with hands stopping at waist level or delayed responses to radio commands. These errors consistently led to harder-than-normal landings.
- Radio Communication Challenges: Poor or lost radio contact contributed to misjudged approaches and landings, forcing students to rely on self-execution.
- Environmental Factors: Wind gusts, thermals, and landing terrain (soft ground, asphalt, ponds, treed areas) added complexity, sometimes worsening outcomes despite otherwise good canopy control.

Analyzing only the reported Student accidents, it was found that 100% of the injuries were sustained during landing. Notably, 66.67% of these accidents reported no attempt at a Parachute Landing (PLF). Additionally, the date reported two (2) students that landed off the designated landing zone with winds being identified as a factor.

Four students experienced separate main canopy malfunctions: one had a collapsed corner and line twists that worsened after pulling toggles while still twisted; another had a riser cover open in freefall, causing a toggle to release and create a bag lock; a third encountered a line over after an otherwise normal PFF jump; and a fourth discovered a canopy tear after noticing the right side flapping during control checks and determined the canopy was unflyable. In each case, emergency procedures were carried out and all students landed safely under their reserves.

3.4. Experienced Skydive AIM Statistics

Based on the total submitted AIM reports for 2025, Accidents accounted for 35.56%, with no reported change compared to 2024 and a 5-year trending decrease of 6.98%. Incidents accounted for 20% of the 2025 AIM reports for the Experienced category. We are seeing a decreasing trending pattern with 35.71% decrease over 3 years, and a 23.73% decrease over 5 years. Malfunctions accounted for 42.22% with a decrease of 13.64% over 2024 and a 5-year trending increase of 6.74% (*Table 6: Total AIMs Reported for Experience Occurrences*).

TABLE 6 : Total AIMs Report for Experience Occurrences

	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
Accident	16	16	20	20	14	16	17	17	19	8
Incident	9	22	11	11	6	4	2	7	7	11
Malfunction	19	22	17	18	13	21	13	12	19	17
Fatality	1	1	0	4	1	2	1	0	1	1
Total	45	61	48	53	34	43	33	36	46	37

In review of the data, it was indicated that 711.30 was the average jump number (365 was the Median) for the Experienced category who presented an occurrence. Looking at only the reported accidents, the average jump number was 670.25 (420 was the median jump number) while further breakdown of reported Landing occurrences indicated an average jump number of 419.81 (307.5 Median). Further analysis indicates that Novice jumpers (sub 100 jumps) accounted for 20% of all Experience category occurrences, while jumpers with 101-499 jumps accounted for 40%, 500-999 jumps accounted for 15.56%, and jumpers with more than 1000 jumps accounted for 24.44%.

A further look into the jump numbers revealed that although jumpers may have many total jumps, an important number to refer to is the jump numbers on the equipment used when the occurrence happened. More specifically, where an occurrence led to an accident. The following information leads to diving deeper into an analysis of a possible correlation between Total Jump Numbers and Changes to Equipment (such as downsizing, changing canopy platforms, etc).

	Average Jump # when an accident was recorded			
	<100 Jumps	100-499 Jumps	500-999 Jumps	>1000 Jumps
Jumpers Total Jump #	35.25	244.2	713.67	1749
Total # of Jumpers	4	5	3	4
Avg Jump # on Equipment	13.57	207.5	-	1000
Total # of Jumpers	7	3	-	1

*Note: Not all reports included Jump # on Equipment data

A closer analysis of the Experience category AIM reports indicated that deployment occurrences accounted for 46.67% of the total 2025 submissions (*Table 3: Total AIMs Reported by Category: Experience*) Looking at the 3-year trending, we can see an increase of 1.61% with an increase of 29.63% over the 10-year trend. In the deployment occurrences, 75% successfully initiated Emergency Procedures. Key trends noted in the qualitative analysis include:

- **Hard Openings & Physical Injuries:** Multiple cases describe very hard or aggressive canopy openings leading to injuries such as shoulder dislocation, spinal fractures, and muscle strain. These highlight the potential physical toll of opening forces.
- **Line Twists & Spinning Malfunctions:** A recurring theme is line twists following deployment, often escalating into spinning dives. These malfunctions frequently required cutaways and reserve deployments, though most were resolved safely.
- **Toggle/Control Line Failures:** Several incidents involved toggles failing to release or broken control lines, resulting in loss of canopy control and necessitating emergency procedures.
- **Off-Dropzone Landings:** A number of jumpers landed off the dropzone in fields or other areas after cutaways or malfunctions, showing how canopy control issues often lead to unplanned landings.

- **Equipment & Packing Issues:** Suspected packing errors and component wear contributed to malfunctions, reinforcing the importance of gear checks and regular gear inspections.

In reviewing all the AIM reports submitted for the Experienced category, it was noted that Landing occurrences accounted for 35.56% of reported overall occurrences in 2025 (*Table 3: Total AIMs Reported by Category: Experience*). Landing occurrences accounted for 68.75% of all reported accidents in the Experience category. Key trends noted in the qualitative analysis include:

- **Toggle/Control Errors:** Loss of toggle grip or incomplete flare execution directly contributed to canopy surges and hard landings.
- **Environmental Hazards:** Uneven terrain (gopher holes, soft ground, fences, trees, buildings) repeatedly increased injury risk, especially for less experienced jumpers.
- **Pattern Misjudgment:** Several jumpers miscalculated altitude or turn height, leading to low turns, tree strikes, or overshooting landing zones.
- **High-Performance Maneuvers:** Swoop attempts and aggressive riser turns at low altitude resulted in serious injuries.
- **Collisions:** At least one case involved a jumper colliding with a person walking across the landing area, highlighting ground safety risks.
- **Wind & Weather Factors:** High winds, no-wind landings, and thermals contributed to fast approaches, reduced canopy penetration, and unstable flares.

3.5. Equipment Irregularity AIM Statistics

An Equipment occurrence shall be considered as any irregularity related to equipment that occurs outside of the physical phases of a skydive that could have resulted in an Accident, Incident, or Malfunction.

Two separate equipment issues were reported in 2025. In the first event, a jumper’s left brake line broke on deployment, though the canopy remained flyable and the jumper landed safely using rear risers; the DZ rigger later confirmed the brake lines were worn, highlighting the need for more consistent inspection of long-term rental gear. In the second event, an equipment inspection uncovered multiple line-continuity errors and two previously repaired patches with poor-quality stitching.

3.6. Aircraft AIM Statistics

There was one (1) recorded occurrences for Aircraft in 2025 within Canada. A Cessna 206 experienced an in-flight emergency on its final skydiving load of the day when, during descent, a strong burning smell and smoke entered the cabin, followed by severe engine roughness and partial power loss. Believing it to be an engine fire or major internal failure, the pilot executed the engine-fire checklist, declared an emergency, and set up for an off-nominal landing. With electrical systems shut down and flaps unavailable, the pilot conducted a power-off glide approach, landing long and allowing the aircraft to roll into the perimeter fence to stop. The aircraft came to rest safely, and no injuries occurred.

3.7. Fatality AIM Statistics

There was one (1) reported fatality in 2025. Following an extensive root cause analysis of the fatal skydiving event, each critical phase of the skydive—Equipment preparation, Aircraft Exit, Freefall, Canopy Deployment, and Landing—was thoroughly examined. Multiple contributing factors were identified across these stages.

4 – CONCLUSIONS

4.1. General Recommendations

Although it is important for case-by-case occurrences to be reviewed, there are some key common occurrences across both Students, Experience Skydivers, and Coaches that can be addressed. Reviewing existing educational tools can benefit the skydiving community.

- CSPA is working with the PIA Technical Committee in tracking and analyzing hard openings. CSPA strongly encourages reporting any experiences with hard openings through the CSPA AIM reporting system.
- Adherence for all jumpers to CSPA PIM 1: Basic Safety Rule (BSR) 4.4 – “INSPECTION Every parachutist, prior to boarding the aircraft for a parachute descent, shall have their equipment safety-checked by another CoP/FAI rated parachutist.”
- **Intentional and unintentional low turns can result in serious injury or death.** It is important to recognize your limitations, including but not limited to, currency, skill level, external inputs, and personal inputs. Review of CSPA PIM2B; Section 6.3.1 *Factors Affecting Human Performance*, will assist in recognizing performance inhibiting factors.
- Altitude Awareness is our #1 survival skill. "The minimum altitudes (AGL) at which the main parachute must be activated are:
 - 4500’ for all Tandem jumps
 - 3000’ for all students, Solo & A CoP holders
 - 2500’ for B, C, and D CoP holders" (CSPA PIM1; Section 2.5 *Basic Safety Rules - General*)
- Regular inspection of equipment during packing should be completed and any identified issues addressed. Refer to CSPA Main Parachute Inspection Guide on the website
- Reviewing malfunctions often will help jumpers deal with most situations that can occur at opening (PIM2B; Section 6.1.1 *Canopy Malfunctions Review*)
- Review and practice of Emergency Procedures should be conducted regularly (CSPA PIM2A-2009; Section 3.3 *Activation of Reserve (Emergency Procedures)*).
- Review educational material on *Landing Techniques* (CSPA PIM2A-2009; Section 6.7), *Landing Pattern* (CSPA PIM2A-2009; Section 6.9), and *Landing Problems and Solutions* (CSPA PIM2A-2009; Section 6.17.5);
- Review educational material on *Hazards Near the Ground* (CSPA PIM2A-2009; Section 6.17.4)
- Review and practice the Parachute Landing Fall (PLF) (*SSI Reference Manual, Appendix - Skydiving Technical Knowledge PLF Landing*).
- Review the [CSPA Sport Canopy Endorsements](#) document and practice appropriate canopy skill(s) related to areas of performance opportunity
- Review proper body position during deployment, (CSPA PIM2A-2009; Section 5.4 *Activation*)

Additionally, it is important to consider the following:

- Refer to the CSPA Skydiving Skills Grid on a regular basis to understand and educate yourself on progressing in the sport safely
- Coaches, instructors, and jumpers should be using the downsizing chart in PIM 2B to guide the downsizing progression
- Review of equipment specific packing procedures should be completed and consult with a Rigger if necessary

- The use of seat belts in an aircraft for the purpose of skydiving is mandatory for movement on the ground, takeoff and landing. Refer to [CSPA Article “Use of Seatbelts”](#).
- Assess, flag, and/or repair potential obstacles and hazard areas in landing area, such as uneven ground, animal holes, drainage, and so forth to minimize potential injury
- Anticipatory skills can be improved if you learn and practice skydiving skills in the sequence in which they occur, and mentally and physically rehearse the skydive and your emergency procedures, therefore a focused review on *Section 2 Preparation: Mental and Physical* (CSPA PIM2A-2009)
- Attend a Safety Day, either through your own Dropzone or wherever you can find one, every year so you stay updated and reminded of good skydive practices

4.2. Experienced Jumpers and Coaches Additional Recommendations

Of key importance for skydiving instructors and coaches, the following should be considered:

- Jumper should perform and review procedures of full gear checks prior to boarding the aircraft (CSPA PIM2A-2009; Section 3.7.1 *Safety Check*).
- Regular inspection of equipment during packing should be completed and any identified issues addressed. Consultation with a Rigger is recommended for any equipment uncertainties.
- Never attempt anything beyond your skill level, or without first consulting a certified coach experienced in that discipline. Consultation with a CSPA Coach 3 is encouraged specific to Wingsuiting, Canopy Piloting, and Freeflying
- Review of PIM2B (2016) Section 6.5 *Assessing Terrain* is recommended to understand the effects and dangers of turbulence. Actively look at the sight picture at various altitudes during the climb to altitude, to develop visual cues.
- Review educational material on *Improving Your Accuracy* (CSPA Sport Canopy Endorsement; Landing Patterns)
- Canopy control starts even prior to any skydiver getting into a plane and a lot of factors need to be considered/coached: Review of *Pre-Boarding Considerations (Canopy Information)*; CSPA Sport Canopy Endorsement

4.3. Instructor (PFFI, SSI, JM, GCI) Additional Recommendations

In further analysis of the student occurrences the T&SC, in collaboration with the CSPA Coaching Working Committee (CWC), additional key factors for Instructors were identified resulting in the following to also be considered:

- Jump Masters (JM) should review material on Assisting the Students Exit (JM Reference Manual, Section 2.9.2), Deployment System Control (JM Reference Manual, Section 2.9.3), and Climb Out Situations (JM Reference Manual, Section 4.1.3).
- Instructors should routinely review the unusual situations and emergency procedures as listed in the CSPA PFFI Reference Manual.
- Students should be taught, review, and practice the Parachute Landing Fall (PLF) referencing SSI Reference Manual, Appendix - Skydiving Technical Knowledge PLF Landing.
- Careful evaluation of student's practice on the ground against a pre-defined standard is an essential aspect of student training. If the student is unable to perform the tasks on the ground, correctly and in real time, they are unlikely to perform correctly in the freefall. Freefall tasks are high stress, and there must be enough repetitions and proper evaluations of the student's demonstration of the skills on the

ground (min 3x correctly in real time). Instructors should clearly understand what they are teaching, why, and what the acceptable standard is for a student to be allowed to perform the skydive.

- "Every student shall receive a safety check by an Instructor or Coach prior to boarding the aircraft" (CSPA PIM1; *Basic Safety Rules - Students & Instructors*, Section 2.13)
- It is strongly advised to use an audible altimeter and an AAD, for your safety, even if this equipment is optional at your dropzone. (CSPA PFFI Reference Manual)
- Student waivers should be reviewed, and students should be asked if any pre-existing medical conditions and/or concerns that could inhibit the ability for a safe skydive. Instructors should have the student practice with realism on the ground as this may identify any barriers to a safe skydive.
- Actively ask the student to look at the sight picture at various altitudes during the climb to altitude, to develop visual cues.
- Instructor and Student to review and practice flare technique on the ground prior to skydive, including but not limited to, the guidance from Ground Control Instructor (GCI) to students in the landing of their canopies, through use of a recognized method of signaling.
- GCI should ensure accurate coaching and currency reviewing the Ground Control Instructor Reference Manual, *Communication Rules*.
- Instructors should ensure detailed information pertaining to individual skydive performance is recorded accurately in student's logbook (CSPA PIM2A-2009; Section 2.5 *Logging*).

4.4. Dropzone Safety Officer (DZSO) and Dropzone Owners (DZO) Additional Recommendations

In further analysis of the Overall AIM occurrences the T&SC, in collaboration with the CSPA Coaching Working Committee (CWC), additional key factors for DZSOs & DZOs were identified resulting in the following to also be considered:

- An audit of operating procedures and regular checks for compliance with CSPA PIM1 Section 4.4 (Inspection): "Every parachutist, prior to boarding the aircraft for a parachute descent, shall have their equipment safety-checked by another CoP/FAI rated parachutist."
- DZSOs and/or DZOs should evaluate their Standard Operating Procedures as it relates to the use of AADs and evaluate (based on their set requirements for AADs) potential areas for increased education and use of AADs
- DZSOs and/or DZOs should evaluate how altitude awareness is being trained and look for any possible improvements to their existing training processes.
- Ensure skydivers have the required training before attempting any skill, or using any equipment (e.g., downsizing a canopy). Jumpers, Coaches, Instructors, and Drop Zone Safety Officers are encouraged to refer to PIM2B, Section 3.13 *Parachute Downsizing Criterion* to ensure the appropriate downsizing for an individual.
- Student waivers should be reviewed, and students should be asked if any pre-existing medical conditions and/or concerns that could inhibit the ability for a safe skydive.
- Regularly assess, flag, and/or repair potential obstacles and hazard areas in landing area, such as uneven ground, animal holes, drainage, and so forth to minimize potential injury. Understand how change in climate, such as extremely dry or wet areas, can create unusual hazards in the landing zone and surrounding areas.
- Educate packers on regular gear checks, including but not limited to, checking the condition of lines when packing parachutes. Ensure Standard Operating Procedure (SOP) in place for packers and/or

riggers to report any equipment concerns. Refer to [CSPA Main Parachute Inspection Guide](#) on the website

- DZSOs are encouraged to actively promote, educate, and enforce safety at a dropzone in collaboration with the DZO for all jumpers, instructors, coaches, and staff.
- DZSO and/or DZO recommendations on the AIM reports are a crucial component in the overall understanding and analysis of occurrences. We strongly encourage all DZSOs and DZOs to record all occurrences (accident, incidents, and malfunctions) to ensure our skydiving community has an opportunity to learn and further enhance our safety tools. CSPA can assist in confidential root cause analysis surrounding any areas of concern and/or proactive preventative measures, upon request.

4.5. Riggers and Packers Additional Recommendations

Of key importance for Riggers and Packers, the following should also be considered:

- Regular inspection of equipment during packing should be completed and any identified issues addressed. Refer to [CSPA Main Parachute Inspection Guide](#) on the website.
- Packers should consult with a Rigger for any equipment uncertainties and/or packing procedure concerns/questions.
- Review of equipment specific packing procedures should be completed and consult with a Rigger if necessary
- Regular review of the [Equipment Technical Bulletins](#) & the [CSPA Resource List](#) on the website.
- Riggers and packers should regularly review manufacturers recommendations and be careful not to become complacent in their regular rigging/packing tasks
- Riggers and packers should complete a CSPA AIM Report for any equipment irregularities observed during packing, inspection, or maintenance to ensure timely documentation and safety analysis.

5 – SUMMARY

According to the 2024 International Skydiving Commission (ISC) Safety Survey Report, it was concluded that human error on the part of the skydiver accounted for 63% of all reported fatalities in 2024 (based on data supplied by 41 countries, a 51% response rate). 7.28 million skydives were made by 1.46 million jumpers (this includes Tandems) worldwide with twenty-seven (27) reported fatalities in 2024. The ISC Technical & Safety Committee also reported that this percentage was consistently high over many years.

The report states, “Human error has always been, and continues to be, the major factor in skydiving fatalities. The attention of all personnel involved in coaching and training must be continuously focused on safety training and reinforcement. Safety is best taught at Dropzones, where students, from their first jump, and as they progress, have their attention drawn to safety issues and safe conduct” (2024 ISC Safety Survey Report; Section 4.2)

Fatalities were broken down into the following categories:

- Students (0-25 Freefalls) 4 Total (this includes 2 Tandem Students)
- Intermediate (26-250 Freefalls) 4 Total
- Experts (251+ Freefalls) 19 Total

The data gathered indicated that 20 (74%) of the 27 fatalities occurred with the skydiver having at least one good parachute. It was also noted that 12 (44%) of the fatalities occurred as the skydiver was landing the parachute. The top three identified causes of reported fatalities in 2024 were:

1. Intentional fast landing 7 (29%)
2. Other landing error 5 (21%)
3. Tandem Fatalities 3 (13%)

The ISC report also stated, “While there are many factors in an AAD firing, the large number reported as saving lives is a cause for concern. The actual number of ‘saves’ may in fact be somewhat greater than the reported 58, as AADs can be field-serviced. The widespread use of AAD would appear to be a major factor in the reduction of skydiving fatalities”

The reason we look to our own AIM report analysis and those at the international level, is to identify common trends and work toward preventative measures to allow for continued safety in our skydiving community. Completing AIM reports, no matter how insignificant one may feel the occurrence is, helps assist in the common goal of fatality prevention worldwide.

It is important to recognize your limitations, including but not limited to, currency, skill level, external inputs, and personal inputs. Review of CSPA PIM2B; Section 6.3.1 *Factors Affecting Human Performance* will assist in recognizing possible performance inhibiting factors. Additionally, jumpers should regularly review the [CSPA Sport Canopy Endorsement](#) document to ensure a safe transition during training and to assist in their overall skills development and awareness. Exercising caution, common sense, self-discipline, control, alertness, and better judgment is highly recommended to help ensure continued safety. Never attempt anything beyond your skill level, or without first consulting a certified coach experienced in that discipline.

CSPA Technical & Safety Committee (T&SC), in partnership with the CSPA Governing Regulatory Committee (GRC), and legal council, regularly audit for improvements of the current Standard Operating Procedure (SOP) for AIM reporting, analysis and communication.

What are the benefits to CSPA Members and Registered Participants (RPs)?

- Improved analysis process to identify root cause(s), areas of opportunity and trending for all AIM occurrences.
- Less delay in communication of AIM trends and factual findings to CSPA Members and RPs. The goal is to have occurrence and recommendations posted to the CSPA website on a regular basis for easier access and utilization.
- Communication regarding fatality occurrences, including the occurrence factual findings and root cause analysis recommendations.
- Additional protection for CSPA, its staff, members, and RPs, regarding potential legal disputes. Completion of the AIM report is still required within ten (10) days of occurrence to obtain access to the legal defence funds as outlined in CSPA PIM 1 – Section 1.17 *Insurance Policy – On Dropzone*.
- Assistance with a more proactive approach to existing CSPA programs and areas of opportunity for improvement within these programs
- Ability to work collaboratively with other parachuting associations in the gathering of statistics and data to improve skydiving safety practices world-wide.

Please be reminded that CSPA is always willing to offer support with internal root cause analysis. If you would like to take advantage of this free service, you can contact Michelle at the CSPA office and she will direct your requests accordingly.

6 – REFERENCES AND RESOURCES

- [CSPA PIM 1: Basic Safety Rules and Recommendations](#)
- [CSPA PIM 2A: Basic Skydiving Skills](#)
- [CSPA PIM 2B: Recreational Skydiving Skills](#)
- [CSPA PIM 2C: Advanced Skydiving Skills](#)
- [Long Term Development \(LTD\) Flight Plan](#)
- [Sport Canopy Endorsements](#)
- [Safety Day](#)
- [Technical Recommendations](#)
- [Equipment Technical Bulletins](#)
- [Safety Management System](#)
- [AIM Report](#)
- [JM – Reference Manual](#)
- [PFFI – Reference Manual](#)
- [GCI – Reference Manual](#)
- [SSI – Reference Manual](#)
- [CSPA Safety & Educational Resources](#)
 - CSPA Movement Reference Guide
 - CSPA Main Parachute Inspection Guide
 - CSPA Article “Use of Seatbelts”.
- [FAI – International Skydiving Commission – 2024 Safety Survey Report](#)

7 – GRAPHICAL REPRESENTATIONS







